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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,534	12/21/2001	Jean Pierre Maumus	BDL-372XX	5871

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WEINGARTEN, SCHURGIN, GAGNEBIN & LEOVICI LLP
TEN POST OFFICE SQUARE
BOSTON, MA 02109

EXAMINER

STACOVICI, STEFAN

ART UNIT	PAPER NUMBER
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1732

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,534

Applicant(s)

MAUMUS ET AL.

Examiner

Stefan Staicovici

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 17-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-23 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-16, drawn to a process of molding, classified in class 264, subclass 257.
 - II. Claims 17-23, drawn to a molding apparatus, classified in class 425, subclass 392.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions Group I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case, the apparatus as claimed can be used to practice another and materially different process such as, forcing the pegs into a resin impregnated fabric, expanding the pegs to push away the resin impregnated fabric from the surface of the peg to form holes and curing the resin while maintaining the pegs expanded in order to shape the interior of the holes.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Mr. Charles Gagnebin, III on March 5, 2004 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-16. Affirmation of this election must be made by applicant in replying to this Office action. Claims

17-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

6. The abstract of the disclosure is objected to because the use of legal phraseology such as "comprising" should be avoided. Correction is required. See MPEP § 608.01(b).

7. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: "Method of Manufacturing Honeycomb Structures".

8. The disclosure is objected to because of the following informalities: on page 7, line 6, before "ambient", "of" should be replaced with --at--.

Appropriate correction is required.

Drawings

9. Figures 1-6 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected

drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

10. Claims 1-16 are objected to because of the following informalities: the numbering of the claims should be rewritten having a parenthesis after the number and a dot after the parentheses such as "1)". Further, each method step should be indented and have a lettering to define it from other method steps such as "a)". Appropriate correction is required.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-3, 5, 9-11, 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greszczuk (US Patent No. 4,696,711) in view of Buhler *et al.* (US Patent No. 5,039,296).

Greszczuk ('711) teaches the basic claimed process of making a fiber reinforced structure including, providing a resin impregnated fiber structure (12), forming a plurality of holes (16) (staggered cells) in said resin impregnated fiber structure, forcing a plurality of bolts (18) (pegs) into said holes (16) (cells), heating said structure to cure said resin and removing said bolts after curing of said fiber (see col. 3, lines 3-28).

Regarding claims 1-3, although Greszczuk ('711) teaches heating of said bolts (18), Greszczuk ('711) does not teach expanding said bolts. Buhler *et al.* ('296) teach a process for press molding an article having holes therein including, providing a plurality of expandable pins positioned on a plate, introducing said pins into a mold cavity and, molding said article having holes therein by expanding said pins and concurrently forming said article (see Abstract). Therefore, it would have been obvious for one of ordinary skill in the art to have provided the expandable pins of Buhler *et al.* ('296) to form the holes by the process of Greszczuk ('711) because, Buhler *et al.* ('296) teach that expandable pins provide for improved tolerances of the resulting hole because pressure is being applied to the interior of said holes.

In regard to claim 5, Greszczuk ('711) teach heating in an oven.

In regard to claim 9, Greszczuk ('711) teach applying an anti-adhesive layer (mold release) to said bolts (18) (see col. 3, lines 34-36).

Specifically regarding claims 10-11, Buhler *et al.* ('296) teach a process for press molding an article having holes therein including, providing a plurality of expandable pins positioned on a plate, introducing said pins into a mold cavity and, molding said article having holes therein by blowing a pressurized gas thorough said pins and concurrently forming said article (see Abstract). Further, Buhler *et al.* ('296) teach deflating said pins prior to withdrawal. Therefore, it would have been obvious for one of ordinary skill in the art to have provided the expandable pins of Buhler *et al.* ('296) to form the holes by the process of Greszczuk ('711) because, Buhler *et al.* ('296) teach that expandable pins provide for improved tolerances of the resulting hole because pressure is being applied to the interior of said holes.

Regarding claims 13-15, Greszczuk ('711) teach a resin impregnated fiber preform that is impregnated prior to making a plurality of holes (cells) therethrough. Further, Greszczuk ('711) teach curing said resin while maintaining said bolts (18) in said holes (16).

13. Claims 1, 4 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greszczuk (US Patent No. 4,696,711) in view of Marchant (US Patent No. 6,264,868 B1).

Greszczuk ('711) teaches the basic claimed process of making a fiber reinforced structure including, providing a resin impregnated fiber structure (12), forming a plurality of holes (16) (staggered cells) in said resin impregnated fiber structure, forcing a plurality of bolts (18) (pegs) into said holes (16) (cells), heating said structure to cure said resin and removing said bolts after curing of said fiber (see col. 3, lines 3-28).

Regarding claims 1, 4 and 6-7, although Greszczuk ('711) teaches heating of said bolts (18) in an oven, Greszczuk ('711) does not teach expanding said bolts. It is noted that a well-known physical principle states that metal expands upon heating and shrinks upon cooling. Marchant ('868) teaches a molding process including, providing an expandable core having a body and a silicone rubber sheath that expands upon heating and shrinks upon cooling (see col. 6, lines 43-55). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a silicone sheath as taught by Marchant ('868) to the bolts in the process of Greszczuk ('711) because, Marchant ('868) specifically teach that a silicone sheath provides for improved molding conditions by imparting its shape to the molded material, hence improving tolerances of the molded product (see col. 3, lines 24-27).

14. Claims 1, 4 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greszczuk (US Patent No. 4,696,711) in view of Castanie *et al.* (US Patent No. 6,290,889 B1).

Greszczuk ('711) teaches the basic claimed process of making a fiber reinforced structure including, providing a resin impregnated fiber structure (12), forming a plurality of holes (16) (staggered cells) in said resin impregnated fiber structure, forcing a plurality of bolts (18) (pegs) into said holes (16) (cells), heating said structure to cure said resin and removing said bolts after curing of said fiber (see col. 3, lines 3-28).

Regarding claims 1, 4 and 6-8, although Greszczuk ('711) teaches heating of said bolts (18) in an oven, Greszczuk ('711) does not teach expanding said bolts. It is noted that a well-known physical principle states that metal expands upon heating and shrinks upon cooling. Castanie *et al.* ('889) teach a molding process including, providing an expandable core having a metallic body and a silicone rubber sheath, said core expanding upon heating and shrinking upon cooling (see col. 3, lines 62-66 and col. 4, line 66 through col. 5; line 6). Therefore, it would have been obvious for one of ordinary skill in the art to have provided a metallic core surrounded by a silicone sheath as taught by Castanie *et al.* ('889) in the process of Greszczuk ('711) because, Castanie *et al.* ('889) specifically teach that such a core provides for improved molding conditions by imparting its shape to the molded material and reduces porosity, hence improving tolerances of the molded product.

15. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greszczuk (US Patent No. 4,696,711) in view of Buhler *et al.* (US Patent No. 5,039,296) and in further view of Delage *et al.* (US Patent No. 5,514,445).

Greszczuk ('711) in view of Buhler *et al.* ('296) teach the basic claimed process as described above.

Regarding claim 16, Greszczuk ('711) in view of Buhler *et al.* ('296) do not teach densifying the fiber fabric. Delage *et al.* ('445) teach a method for manufacturing a carbon-carbon fabric including densifying said fabric by chemical vapor infiltration (see col. 6, lines 26-34). Therefore, it would have been obvious for one of ordinary skill in the art to provided a densifying process as taught by Delage *et al.* ('445) to densify the carbon fiber fabric in the process of Greszczuk ('711) in view of Buhler *et al.* ('296) due to a variety of advantages that densification provides such as reduced porosity, increased strength, increased rigidity, etc.

16. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greszczuk (US Patent No. 4,696,711) in view of Marchant (US Patent No. 6,264,868 B1) and in further view of Delage *et al.* (US Patent No. 5,514,445)

Greszczuk ('711) in view of Marchant ('868) teach the basic claimed process as described above.

Regarding claim 16, Greszczuk ('711) in view of Marchant ('868) do not teach densifying the fiber fabric. Delage *et al.* ('445) teach a method for manufacturing a carbon-carbon fabric including densifying said fabric by chemical vapor infiltration (see col. 6, lines 26-34). Therefore, it would have been obvious for one of ordinary skill in the art to provided a densifying process as taught by Delage *et al.* ('445) to densify the carbon fiber fabric in the process of Greszczuk ('711) in view of Marchant ('868) due to a variety of advantages that densification provides such as reduced porosity, increased strength, increased rigidity, etc.

17. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Greszczuk (US Patent No. 4,696,711) in view of Castanie *et al.* (US Patent No. 6,290,889 B1) and in further view of Delage *et al.* (US Patent No. 5,514,445).

Greszczuk ('711) in view of Castanie *et al.* ('889) teach the basic claimed process as described above.

Regarding claim 16, Greszczuk ('711) in view of Castanie *et al.* ('889) do not teach densifying the fiber fabric. Delage *et al.* ('445) teach a method for manufacturing a carbon-carbon fabric including densifying said fabric by chemical vapor infiltration (see col. 6, lines 26-34). Therefore, it would have been obvious for one of ordinary skill in the art to provided a densifying process as taught by Delage *et al.* ('445) to densify the carbon fiber fabric in the process of Greszczuk ('711) in view of Castanie *et al.* ('889) due to a variety of advantages that densification provides such as reduced porosity, increased strength, increased rigidity, etc.

Allowable Subject Matter

18. Claim 12 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

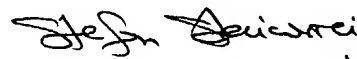
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20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Staicovici, Ph.D. whose telephone number is (571) 272-1208. The examiner can normally be reached on Monday-Friday 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael P. Colaianni, can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stefan Staicovici, PhD



3/19/04

Primary Examiner

AU 1732

March 19, 2004